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**Submitted to the US House of Representatives Select Subcommittee on the Coronavirus  
Pandemic, Hearings on “Investigating the Origins of COVID-19”**

*March 8, 2023*

Chairman Wenstrup, Ranking Member Ruiz, and members of the Select Subcommittee on the  
Coronavirus Pandemic,

It is my great honor to join you today. We are primarily here because the Chinese government  
has done everything in its power to prevent the type of international scientific and forensic  
investigation into the origins of the COVID-19 pandemic that is three years overdue and still  
urgently required. We are also here because there is more that we in the United States can and  
must do to make progress on this critically important issue, even if China continues to  
stonewall. This includes establishing a bipartisan US national COVID-19 commission, as I will  
discuss later in my testimony.

As one of the earliest public voices calling for a full investigation into the origins of the COVID-  
19 pandemic, including into the distinct possibility this crisis may stem from a research-related  
incident in Wuhan, I’ve waited more than three years for these hearings to be held. Getting to  
this point has required a great deal of effort by many people.

Since early 2020, I have been extremely public and active calling for a full origins investigation. I  
started first on my own, launching my pandemic origins website in April 2020,<sup>1</sup> writing multiple  
editorials,<sup>2</sup> and incessantly reaching out to journalists, editors, and officials in the United States  
government and around the world to share the evidence I was compiling.<sup>3</sup> Later that year, I  
began carrying out this work in conjunction with our small group of tireless, self-motivated  
experts from around the world who came together into a community some have called the

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<sup>1</sup> Jamie Metzl, “Origins of SARS-CoV-2 | Jamie Metzl,” February 7, 2023, <https://jamiemetzl.com/origins-of-sars-cov-2/>.

<sup>2</sup> Jamie Metzl, “Defunding the WHO Mid-Pandemic Is Lunacy | Opinion,” *Newsweek*, April 16, 2020, <https://www.newsweek.com/defunding-who-mid-pandemic-lunacy-opinion-1498369>.

<sup>3</sup> Jamie Metzl, “Opinion | How to Hold Beijing Accountable for the Coronavirus,” *Wall Street Journal*, July 28, 2020, sec. Opinion, <https://www.wsj.com/articles/how-to-hold-beijing-accountable-for-the-coronavirus-11595976973>.

“Paris Group.”<sup>4</sup> This community also included highly capable virologists, biologists, biosafety experts, data scientists, and others. I was a lead author of our open letters released on [March 4](#),<sup>5</sup> [April 7](#),<sup>6</sup> [April 30](#),<sup>7</sup> and [June 28](#),<sup>8</sup> 2021, which were featured by most major news outlets across the globe. In them, we repeatedly called for a full investigation into all credible pandemic origins hypotheses and carefully laid out how this could be done, even without Chinese cooperation.

Because so many of us have worked so hard for so many years against such ferociously strong headwinds on this issue, I join you today with a deep and sincere request that your committee honor our work by making these hearings as evidence-based, non-partisan, probing, and solutions-oriented as possible.

Determining the origins of this catastrophe is an issue that affects all Americans and people, regardless of our politics or backgrounds. I happen to be a Democrat, which is irrelevant to the work we must do together in the national and global interest. I served in the US National Security Council under President Clinton, in the State Department under Madeleine Albright, and for then Senator Joe Biden many years ago as Deputy Staff Director of the Senate Foreign Relations Committee when he was Chairman. Since the start of the pandemic, I have been in close contact with officials in the Trump and then Biden administrations regarding pandemic origins issue. I have worked with members of Congress of both parties and was in Washington last year to brief a bipartisan group of US senators on COVID-19 origins in a session jointly organized by Republican Senator Roger Marshall and Democrat Kirsten Gillibrand.

Although the official global COVID-19 death toll is around seven million, *The Economist* estimates the real number to be closer to 20 million deaths,<sup>9</sup> including over a million Americans. These are not just numbers. They represent our parents, partners, children, relatives, colleagues, and friends. Over a hundred million people have been thrown into abject poverty.<sup>10</sup> Countless others have faced dramatic physical, emotional, economic, and educational losses.

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<sup>4</sup> Because our community decided to not establish ourselves as a formal group, we do not have an official name, an official viewpoint, or a website. Participants were invited to sign each of our open letters if they chose to do so.

<sup>5</sup> “Letter Seeking International Inquiry into Origins of the Coronavirus,” *The New York Times*, March 4, 2021, sec. U.S., <https://www.nytimes.com/interactive/2021/03/04/us/covid-origins-letter.html>.

<sup>6</sup> “Calls for Further Inquiries into Coronavirus Origins,” *The New York Times*, April 7, 2021, sec. Science, <https://www.nytimes.com/interactive/2021/04/07/science/virus-inquiries-pandemic-origins.html>.

<sup>7</sup> “Open Letter to the World Health Organization and the Members of Its Executive Board,” April 30, 2021, <https://jamiemetzl.com/wp-content/uploads/2021/04/Open-Letter-to-the-World-Health-Organization-and-the-Members-of-its-Executive-Board-1.pdf>.

<sup>8</sup> “Call for a Comprehensive Investigation of the Origin of SARS-CoV-2, If Possible with Chinese Government Participation,” June 28, 2021, <https://jamiemetzl.com/wp-content/uploads/2021/06/Letter-4-Draft-1.pdf>.

<sup>9</sup> “The Pandemic’s True Death Toll,” *The Economist*, March 2, 2023, <https://www.economist.com/graphic-detail/coronavirus-excess-deaths-estimates>.

<sup>10</sup> “SDG Indicators,” *UN Stats*, accessed March 2, 2023, <https://unstats.un.org/sdgs/report/2021/goal-01/>.

We owe ourselves and every one of these victims the fullest possible investigation into how this avoidable tragedy unfolded and our absolute best efforts to ensure that a catastrophe like this never happens again.

Let me be clear.

It is inconceivable that over three years after this deadly pandemic began, no comprehensive and unfettered investigation into pandemic origins has been carried out nor is one currently planned. Twenty million dead and counting and no comprehensive investigation. This injustice is an insult to every victim of this crisis and a clear threat to future generations.

There's a reason we leave no stone unturned when investigating a plane crash. We do it to make flying safer. Similarly, understanding how this pandemic began is essential to prioritizing our response. If, for example, we knew for certain the pandemic stems from a lab incident in Wuhan, I can assure you that efforts to regulate the rapid proliferation of high-containment, and all-too-often high risk, virology labs across the globe would get a massive boost. Critically important biosafety efforts would finally get the high-level national and international attention they deserve.

The primary reason there has been no unfettered investigation into the origins of COVID-19 is the reprehensible actions of the Chinese government. Since the early days of the pandemic, China's government has destroyed samples, hidden records, imprisoned brave Chinese journalists,<sup>11</sup> prevented Chinese scientists from saying or writing anything on pandemic origins without prior government approval,<sup>12</sup> actively spread misinformation,<sup>13</sup> and done pretty much everything possible to prevent the kind of unfettered, evidence-based investigation that is so urgently required.<sup>14</sup> I have personally been condemned by the spokesman of the Chinese Foreign Ministry from his podium in Beijing for having the temerity to ask the most basic and essential questions about pandemic origins.<sup>15</sup>

Over three years ago, in the earliest days of the pandemic, I began looking at the available evidence and became convinced that a COVID-19 lab origin was at very least a serious possibility needing to be fully investigated. By late January 2020, it was already clear that the Wuhan market was likely not where the pandemic began but rather a place where it spread

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<sup>11</sup> Editorial Board, "Opinion | She Told the Truth about Wuhan. Now She Is near Death in a Chinese Prison.," *Washington Post*, November 7, 2021, <https://www.washingtonpost.com/opinions/2021/11/07/zhang-zhan-prisoner-wuhan-china-covid-origin/>.

<sup>12</sup> Andrew Silver and David Cyranoski, "China Is Tightening Its Grip on Coronavirus Research," *Nature* 580, no. 7804 (April 15, 2020): 439–40, <https://doi.org/10.1038/d41586-020-01108-y>.

<sup>13</sup> "COVID-19 Misinformation by China," in *Wikipedia*, February 21, 2023, [https://en.wikipedia.org/w/index.php?title=COVID-19\\_misinformation\\_by\\_China&oldid=1140626264](https://en.wikipedia.org/w/index.php?title=COVID-19_misinformation_by_China&oldid=1140626264).

<sup>14</sup> Metzl, "Origins of SARS-CoV-2 | Jamie Metzl."

<sup>15</sup> Andrew Kerr, "China Attacks WHO Advisory Member for Highlighting Alleged Errors in COVID Origins Report | The Daily Caller," August 4, 2021, <https://dailycaller.com/2021/04/08/china-attacks-jamie-metzl-open-letter/>.

rapidly.<sup>16</sup> It was clear early on that having a SARS virus seemingly primed to infect humans emerge not in the areas of sub-tropical southern China and northern Laos and Burma, where the type of horseshoe bats known to be carriers of the closest relatives of SARS-CoV-2 are to be found, but over a thousand miles away in the central Chinese city of Wuhan, was a critically important clue that could not simply be wished away in the implicit name of expedience or political sensitivities.

Wuhan may not have had these horseshoe bats,<sup>17</sup> but it did have multiple laboratories and institutes working on SARS-like viruses and the world's largest collection of coronaviruses. The Wuhan Institute of Virology in particular had a recent history of doing aggressive research genetically engineering new capabilities into SARS-like viruses,<sup>18</sup> a spotty safety record,<sup>19</sup> and such a problematic construction that the French engineers who designed the building refused to certify its completion.<sup>20</sup>

Later, we learned that the Wuhan Institute of Virology, along with EcoHealth Alliance, the University of North Carolina and others had in March 2018 applied for a 14 million dollar grant from the U.S. Defense Advanced Research Project Agency. In this application, they sought funding to engineer human specific furin cleavage sites into SARS-like viruses to see if they could make those viruses better able to infect “humanized mice” as well as human cells in culture. Although DARPA wisely denied this application, it is common practice for laboratories to be in initial stages of the work for which they seek grant funding.

The SARS-CoV-2 virus which burst on the scene in late 2019 appeared eerily similar to what had been proposed in the DARPA grant application. It also had a furin cleavage site never before

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<sup>16</sup> Chen Wang et al., “A Novel Coronavirus Outbreak of Global Health Concern,” *The Lancet* 395, no. 10223 (January 24, 2020): 470–73, [https://doi.org/10.1016/S0140-6736\(20\)30185-9](https://doi.org/10.1016/S0140-6736(20)30185-9). George Gao et al., “Surveillance of SARS-CoV-2 in the Environment and Animal Samples of the Huanan Seafood Market,” preprint (In Review, February 25, 2022), <https://doi.org/10.21203/rs.3.rs-1370392/v1>. [George Gao, the former head of China's CDC, has stated he does not believe the COVID-19 pandemic has a market origin.]

<sup>17</sup> Samantha Lock, “Wuhan Lab Video Appearing to Show Bats in Cages Fuels Speculation About Pandemic Origins,” June 15, 2021, <https://www.newsweek.com/wuhan-lab-video-shows-bats-cages-speculation-covid19-pandemic-origins-1600748>.

[It should be noted that Wuhan did have these bats, in captivity at the WIV.]

<sup>18</sup> Peter Daszak, “Understanding the Risk of Bat Coronavirus Emergence,” accessed March 2, 2023, <https://reporter.nih.gov/project-details/9819304>. “两株新型蝙蝠SARS相关冠状病毒对表达人ACE2的转基因小鼠的致病性研究-国家自然科学基金摘要查询-MedSci.Cn,” accessed March 3, 2023, [https://www.medsci.cn/sci/nsfc\\_show.do?id=d976823520ca](https://www.medsci.cn/sci/nsfc_show.do?id=d976823520ca).

<sup>19</sup> Josh Rogin, “Opinion | State Department Cables Warned of Safety Issues at Wuhan Lab Studying Bat Coronaviruses,” *Washington Post*, April 14, 2020, <https://www.washingtonpost.com/opinions/2020/04/14/state-department-cables-warned-safety-issues-wuhan-lab-studying-bat-coronaviruses/>.

<sup>20</sup> Jacques Massey and Karl Laske, “The Strange Saga of How France Helped Build Wuhan's Top-Security Virus Lab,” *Mediapart*, May 31, 2020, <https://www.mediapart.fr/en/journal/france/310520/strange-saga-how-france-helped-build-wuhans-top-security-virus-lab>.

seen in any SARS-like virus. This is not necessarily a “smoking gun,” but the growing body of circumstantial evidence suggests a gun that is, at very least, warm to the touch.

None of the people associated with the DARPA proposal disclosed this essential fact before the proposal was leaked nearly two years after the outbreak. Included among them was EcoHealth Alliance CEO Peter Daszak. Not just that. Daszak, a collaborator with and small-scale funder, using United States government funds, of the Wuhan Institute of Virology also failed to disclose any conflict of interest in a now infamous February 2020 letter published in *The Lancet* which claimed a level of confidence regarding a natural origin that was simply not supported by the available evidence and outlandishly labeled all of us raising questions about a possible research-related origin “conspiracy theorists.”<sup>21</sup> A primary rationale articulated by these people was to protect their Chinese counterparts.<sup>22</sup>

I am a strong advocate for collaborating with as many foreign governments and people as feasible, sensible, and safe, including foreign scientists. Brilliant Chinese scientists are doing critically important work in many fields, including healthcare, agriculture, computer science, and other areas which significantly benefits America and the world.<sup>23</sup> But it would be self-defeating for us to believe we should purchase these relationships by our silence on a critical issue like that of pandemic origins, particularly when so many millions of people are unnecessarily dead and many brave Chinese citizens, like Zhang Zhan, are rotting away in Chinese prisons for asking the same questions many foreigners seem somehow afraid to ask.<sup>24</sup>

Rather than being less courageous than heroes like Ms. Zhang, we must instead be inspired by her example to speak openly and honestly and follow the evidence wherever it leads. If we do not, we will lose the opportunity to understand what went wrong and establish the highest possible standards for the future. There is no possible way to establish the principle of

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<sup>21</sup> Charles Calisher et al., “Statement in Support of the Scientists, Public Health Professionals, and Medical Professionals of China Combatting COVID-19,” *The Lancet* 395, no. 10226 (February 19, 2020): e42–43, [https://doi.org/10.1016/S0140-6736\(20\)30418-9](https://doi.org/10.1016/S0140-6736(20)30418-9).

[“We stand together to strongly condemn conspiracy theories suggesting that COVID-19 does not have a natural origin.” Similar outlandish claims were made in a March 2020 *Nature Medicine* [Kristian G. Andersen et al., “The Proximal Origin of SARS-CoV-2 | *Nature Medicine*,” *Nature Medicine*, March 17, 2020, <https://www.nature.com/articles/s41591-020-0820-9>].

<sup>22</sup> Charles Calisher et al., “Statement in Support of the Scientists, Public Health Professionals, and Medical Professionals of China Combatting COVID-19,” *The Lancet* 395, no. 10226 (February 19, 2020): e42–43, [https://doi.org/10.1016/S0140-6736\(20\)30418-9](https://doi.org/10.1016/S0140-6736(20)30418-9).

[“We want you, the science and health professionals of China, to know that we stand with you in your fight against this virus.”]

<sup>23</sup> [See, for example] Josh Stull, “The Benefits of International Collaboration and Global Engagement,” National Institute of Food and Agriculture, September 12, 2022, <http://www.nifa.usda.gov/about-nifa/blogs/benefits-international-collaboration-global-engagement>.

<sup>24</sup> “Free Zhang Zhan.” Amnesty International, [www.amnesty.org/en/petition/china-zhang-zhan/](http://www.amnesty.org/en/petition/china-zhang-zhan/).

transparency and accountability tomorrow without fearlessly and unequivocally establishing that principle today.

A first step in this process is demanding accountability from China. Doing so is not a hostile act, but the opposite. Supporting and joining a full and unfettered investigation has always been the best way for the Chinese government to demonstrate its commitment to understanding what went wrong. By so aggressively thwarting and undermining such a process, China has only fueled suspicions.

Every person on earth, including everyone in China, will benefit from a comprehensive scientific and forensic investigation into pandemic origins in China. We all must demand it. This process should include unimpeded access to the records of the Wuhan Institute of Virology, the Wuhan Centers for Disease Control, the animal laboratories at the University of Wuhan, among other essential resources. It should include access to the WIV virus database which went offline in September 2019 as well as raw epidemiological data. It should allow Chinese scientists to share their knowledge and beliefs freely and without fear of retribution.

Calling for a full audit of the Wuhan labs and suggesting the COVID-19 pandemic may well stem from an accidental research-related incident in Wuhan followed by an active Chinese government coverup and misinformation campaign<sup>25</sup> does not at all mean we shouldn't carefully examine our own behavior and that of our friends and allies. In fact, we must.

It's clear, for example, that the United States government funded some research activities in China where we had no sufficient idea what work was actually being done. Our government failed to effectively oversee activities of grantee organizations like the EcoHealth Alliance.<sup>26</sup> At very least, the current lack of transparency regarding the exact experiments that were done in China supported partly with U.S. government funds shows that our procedures for governing research regarding pathogens of pandemic potential, at home and abroad, remains inadequate. We must objectively and fearlessly look at everything, including ourselves.

Although the pandemic origins investigation should not be politicized, it must carefully consider political contexts. Chinese scientists, for example, are as ethical as other scientists but do not have the freedom to say and write what they wish on sensitive topics or the ultimate ability to safely resist government coercion. The fundamental reason China's initial response to the SARS2 outbreak was as flawed as its response to the SARS1 outbreak 17 years earlier was

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<sup>25</sup>[For a concise review of this argument, see] Yuri Deigin, "Thunder Out of China," *Inference* 6, no. 4 (February 7, 2022), <https://inference-review.com/article/thunder-out-of-china>.

["None of these points is in itself conclusive, but the circumstantial evidence is more suggestive of a lab leak than an act of nature."] See also Alina Chan and Matt Ridley, *Viral*, 2021, <https://www.harperacademic.com/book/9780063139121/viral>.

<sup>26</sup>"The National Institutes of Health and EcoHealth Alliance Did Not Effectively Monitor Awards and Subawards, Resulting in Missed Opportunities to Oversee Research and Other Deficiencies," U.S. Department of Health and Human Services, January 25, 2023, <https://oig.hhs.gov/oas/reports/region5/52100025.asp>.



political.<sup>27</sup> These political dynamics were what allowed the stove fire of the initial outbreak to become the raging inferno of the pandemic. That's why there is no way to sufficiently understand the dynamics underpinning this pandemic outside the context of the unique pathologies of the Chinese state. But for these pathologies, there may well have been no pandemic at all.

We also have our politics here in the United States.

Although I was a critic of President Trump in many ways, did not appreciate much of how he communicated, and often questioned his motives, I did not feel it right to reject his assertions of a COVID-19 lab origin out of hand simply because I was not a fan of the messenger. But even after his assertions,<sup>28</sup> President Trump's administration did not comprehensively task the full United States intelligence community to explore the origins issue. President Biden did make such a tasking, but, in spite of recent efforts by the U.S. Department of Energy and others,<sup>29</sup> this topic has remained under-addressed. As President Trump's former Deputy National Security Advisor Matt Pottinger and I wrote in our recent *Wall Street Journal* editorial, "It's fair to say that both administrations did something and that neither has done enough."<sup>30</sup>

I am so pleased we are holding this hearing today because the U.S. congress, under both Democratic and Republican majorities, has so far also failed to sufficiently step up. The hearings by your subcommittee -- and your subpoena power -- have the potential to change that dynamic, but only if they are done right.

By done right, I mean in a bipartisan manner, following the evidence, and focusing on getting the right answers more than trying to score political points. There is little the Chinese government would welcome more than Americans putting most of our energies into attacking each other on this issue. I mean focusing primarily on China but also asking tough questions about our own actions. I mean fully examining all relevant origins hypotheses, obviously including a lab origin, but also a market origin, which some experts I respect believe to be more probable.<sup>31</sup> I mean being open to evolving our views as new evidence emerges.

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<sup>27</sup> David P. Fidler, *SARS, Governance and the Globalization of Disease*, Palgrave Macmillan, 2004.

<sup>28</sup> Zachary Cohen, Alex Marquardt, and Jim Acosta, "Trump's Claim He's Seen Evidence Coronavirus Originated in China Lab Contradicts US Intel Community | CNN Politics," *CNN Politics*, January 5, 2020, <https://edition.cnn.com/2020/04/30/politics/trump-intelligence-community-china-coronavirus-origins/index.html>.

<sup>29</sup> Julian E. Barnes, "Lab Leak Most Likely Caused Pandemic, Energy Dept. Says," *The New York Times*, February 26, 2023, sec. U.S., <https://www.nytimes.com/2023/02/26/us/politics/china-lab-leak-coronavirus-pandemic.html>.

<sup>30</sup> Jamie Metzl and Matt Pottinger, "Opinion | We Still Don't Know the Truth About Covid," *Wall Street Journal*, February 8, 2023, sec. Opinion, <https://www.wsj.com/articles/we-still-dont-know-the-truth-about-covid-wuhan-lab-virology-pandemic-source-gain-of-function-who-research-accountability-china-congress-11675893326>.

<sup>31</sup> Michael Worobey et al., "The Huanan Seafood Wholesale Market in Wuhan Was the Early Epicenter of the COVID-19 Pandemic," *Science* 377, no. 6609 (August 26, 2022): 951–59, <https://doi.org/10.1126/science.abp8715>. See also Gigi Kwik Gronvall (2021) The Contested Origin of SARS-CoV-2, *Survival*, 63:6, 7–36, DOI: 10.1080/00396338.2021.2006442.

Doing this right means recognizing the critical importance of understanding what went wrong to help lay the essential foundation for a safer future. It means that in addition to these hearings in the House organized by House Republican leaders, we also need hearings in the Senate organized by Senate Democratic leaders. Understanding how this crisis began and determining how we can do better is and must be the ultimate bipartisan and nonpartisan issue.

For the United States, a critical next step, which I have now been promoting for three years, should be to establish a bipartisan US national COVID-19 commission, organized like the 9/11 commission.<sup>32</sup> This commission would examine the origins issue as well as the other failings and shortcomings on the national and international levels. Like the 9/11 commission, it would develop transformative recommendations to help prevent future pandemics and ensure we respond more effectively when outbreaks inevitably occur.

Even if China does not cooperate, as I anticipate will be the case, there are actions we can take here in the United States to gather new data, including by creating a secure whistleblower program allowing for the safe sharing of information from within China and abroad and confidentially reviewing documents and data files associated with the peer review process of key scientific journals.<sup>33</sup>

Focusing on the international level is also critical because the pandemic has taught us, at least I hope, that in our increasingly interconnected world we are all only as safe as the most vulnerable among us. Although some countries may be better prepared than others, a global pandemic puts all of us at risk. Making us safer here in America requires that we do everything possible to help build a safer world.<sup>34</sup> That's why a strong America needs a strong and purposeful international community, including a robust World Health Organization.

Since before the pandemic, I've had a close relationship with the WHO. I was a member of the WHO expert advisory committee on human genome editing<sup>35</sup> and have great respect for the WHO and its current leader, Dr. Tedros Adhanom Ghebreyesus. Because health is in many ways a global issue, our world needs the WHO or an organization like it.

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<sup>32</sup> Jamie Metzl, "The COVID-19 Catastrophe Demands a National Commission Review," Text, *The Hill*, August 17, 2020, <https://thehill.com/opinion/white-house/512298-the-covid-19-catastrophe-demands-a-national-commission-review/>.

<sup>33</sup> "Call for a Comprehensive Investigation of the Origin of SARS-CoV-2, If Possible with Chinese Government Participation," June 28, 2021, <https://jamiemetzl.com/wp-content/uploads/2021/06/Letter-4-Draft-1.pdf>.

<sup>34</sup> Jamie Metzl, "Covid-19 Offers a Chance to Build a Better World. We Must Seize It. (Opinion) | CNN," *CNN Business*, May 17, 2020, <https://edition.cnn.com/2020/05/17/opinions/covid-19-worldwide-response-metzl/index.html>.

<sup>35</sup> WHO, "Human Genome Editing: A Framework for Governance," WHO, December 7, 2021, <https://www.who.int/publications-detail-redirect/9789240030060>.



But although the WHO does very important work, it does so with a hand tied behind its back. The organization has a budget smaller than that of an average US teaching hospital and, even then, only controls around 20 percent of its funds, the rest earmarked by states. It does not have the mandate to carry out its own pandemic surveillance or to send emergency response teams to crisis zones when host countries refuse to allow it. This was the case with China and COVID-19.

In those critical early days, as the Chinese government was actively suppressing heroic whistleblowers like Li Wenliang, destroying samples, disappearing people and records, and knowingly lying to the world about human-to-human transmission, the WHO repeatedly asked the Chinese government to allow WHO emergency response personnel to travel to Wuhan and was denied. Although Dr. Tedros, by his own admission,<sup>36</sup> was then wrong to publicly placate Chinese leaders while privately working to secure greater cooperation by their government,<sup>37</sup> his and the WHO's later interventions were essential, particularly in response to the deeply flawed marching orders the WHO secretariat was given by the member state representatives of the World Health Assembly, its governing body.

A little background is in order.

In early 2020, then Australian prime minister Scott Morrison spoke openly about the need for a meaningful pandemic origins investigation. In response, Beijing hit Australia with massive restrictions on Australian exports to China, including barley, wine, timber, lobster, and coal.<sup>38</sup> Morrison pushed on, with his government raising the origins issue at the May 2020 meeting of the World Health Assembly. Rather than calling for a full investigation into pandemic origins, however, the Assembly instead ratified a Chinese government-supported resolution calling for a joint study into the "zoonotic origins of the virus."<sup>39</sup> This language was interpreted to mean that the Chinese government would control a joint Chinese-international process examining the single theory of natural origins and not the full range of relevant pandemic origin hypotheses. Not only that, the Chinese government was given veto power over which international experts could be included.<sup>40</sup>

Under these conditions, and as might have been expected, the early 2021 mission of the joint study group to Wuhan was a disaster. The international delegation spent two of their four

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<sup>36</sup> Kathy Gilsinan, "How China Deceived the WHO," *The Atlantic*, April 12, 2020, <https://www.theatlantic.com/politics/archive/2020/04/world-health-organization-blame-pandemic-coronavirus/609820/>.

<sup>37</sup> WHO, "WHO Director-General Opening Remarks at the Member State Briefing on the COVID-19 Pandemic Evaluation," WHO, September 7, 2020, <https://www.who.int/director-general/speeches/detail/who-director-general-opening-remarks-at-the-member-state-briefing-on-the-covid-19-pandemic-evaluation---9-july-2020>.

<sup>38</sup> Ye Xue, "China's Economic Sanctions Made Australia More Confident | Lowy Institute," October 22, 2021, <https://www.loyyinstitute.org/the-interpreter/china-s-economic-sanctions-made-australia-more-confident>.

<sup>39</sup> "COVID-19 Response" (SEVENTY-THIRD WORLD HEALTH ASSEMBLY, n.d.).

<sup>40</sup> "WHO-Convened Global Study of the Origins of SARS-CoV-2: Terms of References for the China Part," July 31, 2020, [https://drive.google.com/file/d/1rx0W2efbE0R1Aq-lALWTqD22VsWbTIO-/view?usp=embed\\_facebook](https://drive.google.com/file/d/1rx0W2efbE0R1Aq-lALWTqD22VsWbTIO-/view?usp=embed_facebook).

weeks in the city quarantined in their hotel rooms communicating by Zoom. One of their first stops when released from quarantine was to a propaganda exhibition extolling Xi Jinping's leadership fighting COVID-19. The team had very limited access to raw data and was not even allowed unrestricted access to their Chinese counterparts, including during meals. The visit did not constitute an investigation by any stretch of the imagination and was more akin to a chaperoned study tour.<sup>41</sup>

February 9, 2021, the final day of the joint study mission in Wuhan, was one of the more shameful moments in the history of international public health. In a stage-managed press event in Wuhan, the Chinese and international members of this joint study group asserted, without reasonable evidentiary support, that a jump of the SARS-CoV-2 virus from animals to humans in the wild was likely and that a lab origin was "extremely unlikely" and not worthy of further examination.<sup>42</sup> It later came to light that that group had hardly examined the lab origins hypothesis and had come to its conclusions by a hand vote in a room where the Chinese experts were monitored by Chinese government commissars. The leader of the international delegation had also, outrageously, engaged in political horse-trading with Chinese officials over which hypotheses could be included in the report and which could not, and under what conditions,<sup>43</sup> the very opposite of a scientific approach.

Had the findings of the deeply compromised joint study been left unchallenged, this would have been a major propaganda coup for the Chinese government and a stunning loss to those of us pushing for a comprehensive, unfettered, and unbiased origins investigation.<sup>44</sup> Although many of us on the outside raised our voices in dissent,<sup>45</sup> the most important voice was that of Dr. Tedros.

On February 11, 2021, Dr. Tedros declared that "all hypotheses remain open and require further study." In his remarks when the joint study report was released on April 30, 2021, he stated that he did not believe the joint's team assessment was extensive enough, that "further data and studies will be needed to reach more robust conclusions," that "all hypotheses remain on the table," and that "we must continue to follow the science and leave no stone unturned as

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<sup>41</sup> Lesley Stahl, "What Happened in Wuhan? Why Questions Still Linger on the Origin of the Coronavirus," *CBS News*, March 28, 2021, <https://www.cbsnews.com/news/covid-19-wuhan-origins-60-minutes-2021-03-28/>.

<sup>42</sup> WHO, "COVID-19 Virtual Press Conference Transcript - 9 February 2021," WHO, September 2, 2021, <https://www.who.int/publications/m/item/covid-19-virtual-press-conference-transcript--9-february-2021>.

<sup>43</sup> Adam Taylor, Emily Rauhala, and Selsoe Martin Sorensen, "In New Documentary, WHO Scientist Says Chinese Officials Pressured Investigation to Drop Lab-Leak Hypothesis," *Washington Post*, August 12, 2021, <https://www.washingtonpost.com/world/2021/08/12/who-origins-embarek/>.

<sup>44</sup> Gerry Shih, "As WHO Coronavirus Mission Leaves Empty-Handed, China Claims Propaganda Win," *Washington Post*, February 10, 2021, [https://www.washingtonpost.com/world/asia\\_pacific/coronavirus-china-who-wuhan-pandemic/2021/02/10/f1751148-6b41-11eb-a66e-e27046e9e898\\_story.html](https://www.washingtonpost.com/world/asia_pacific/coronavirus-china-who-wuhan-pandemic/2021/02/10/f1751148-6b41-11eb-a66e-e27046e9e898_story.html).

<sup>45</sup> "Letter Seeking International Inquiry into Origins of the Coronavirus," *The New York Times*, March 4, 2021, sec. U.S., <https://www.nytimes.com/interactive/2021/03/04/us/covid-origins-letter.html>.

we do."<sup>46</sup> Later, he called for the Chinese government to make all relevant raw data available and for a full audit of the Wuhan labs.<sup>47</sup> These calls, and Dr. Tedros himself, were harshly condemned by Chinese government officials.<sup>48</sup>

Dr. Tedros and the WHO leadership then took the unprecedented step of abolishing the flawed joint study process imposed on it by the World Health Assembly and replacing it with a more balanced new group, the Scientific Advisory Group on the Origins of Novel Pathogens (SAGO).<sup>49</sup> When some of us complained the original group of nominees for that group was not sufficiently balanced,<sup>50</sup> the WHO reopened its nomination process and added a leading Canadian expert on investigating lab accidents. The work of SAGO is ongoing, but it was encouraging that its first public report declared the lab origin hypothesis possible and committed the group to fully evaluating this distinct possibility.<sup>51</sup> Not surprisingly, China is not providing the raw data and access the WHO and SAGO have requested.

Regardless, there is still a great deal of work to be done on the international level, and the United States must lead, in partnership with others, these essential efforts.

As a start, more countries and associations of countries must establish their own investigation and lessons learned processes. This cannot be a solely American endeavor. We cannot give the Chinese government a veto over whether or not we investigate the deadliest pandemic in a century.

We also need stronger and better international health treaties. We must help poorer and less developed nations build more effective public health infrastructures. We need stricter design, regulation, and comprehensive oversight of lab security as well as better national and global regulation of dual use research, obviously including gain of function research on pathogens of

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<sup>46</sup> WHO, "WHO Director-General's Remarks at the Member State Briefing on the Report of the International Team Studying the Origins of SARS-CoV-2," WHO, March 30, 2021, <https://www.who.int/director-general/speeches/detail/who-director-general-s-remarks-at-the-member-state-briefing-on-the-report-of-the-international-team-studying-the-origins-of-sars-cov-2>.

<sup>47</sup> Jon Cohen, "With Call for 'raw Data' and Lab Audits, WHO Chief Pressures China on Pandemic Origin Probe," *Science*, July 17, 2021, <https://www.science.org/content/article/who-chief-sharpens-call-china-further-help-probe-origin-pandemic>.

<sup>48</sup> "中华人民共和国外交部," accessed March 2, 2023, <https://www.mfa.gov.cn/>. "Covid: China Rejects WHO Plan for Second Phase of Virus Origin Probe," *BBC News*, July 22, 2021, sec. China, <https://www.bbc.com/news/world-asia-china-57926368>.

<sup>49</sup> World Health Organization, "Scientific Advisory Group on the Origins of Novel Pathogens (SAGO)," WHO, accessed March 2, 2023, [https://www.who.int/groups/scientific-advisory-group-on-the-origins-of-novel-pathogens-\(sago\)](https://www.who.int/groups/scientific-advisory-group-on-the-origins-of-novel-pathogens-(sago)).

<sup>50</sup> Colin Butler et al., *Proposed Changes to the Composition of the SAGO Committee*, 2021, <https://doi.org/10.13140/RG.2.2.18805.50405/1>.

<sup>51</sup> WHO, "Scientific Advisory Group for the Origins of Novel Pathogens (SAGO) - Preliminary Report of the SAGO," September 6, 2022, [https://cdn.who.int/media/docs/default-source/scientific-advisory-group-on-the-origins-of-novel-pathogens/sago-report-09062022.pdf?sfvrsn=42b55bbc\\_1&download=true](https://cdn.who.int/media/docs/default-source/scientific-advisory-group-on-the-origins-of-novel-pathogens/sago-report-09062022.pdf?sfvrsn=42b55bbc_1&download=true).

pandemic potential. We must give the World Health Organization the mandate, resources, and capabilities it needs to do the job we need it to do.<sup>52</sup>

While doing all of this, we must constantly remind ourselves that our goal is to create an environment where beneficial research can flourish. Our world needs virologists, epidemiologists, and high-containment virology labs. We need more global scientific collaboration and empowerment of young people and others around the world to help continually push the boundaries of our knowledge. We only must do so responsibly.

All of this starts with transparency and accountability, and it starts with transparency and accountability now. Our efforts moving forward cannot be built on a foundation of lies. Everyone, every organization, and every government working in good faith to follow the evidence regarding pandemic origins wherever it takes us are on the same side. Those working to prevent this type of investigation are not.

This hearing must be only the beginning. The most substantial work is ahead of us. We must fully investigate pandemic origins and begin building the national and international norms, systems, and structures to prevent this type of catastrophe from ever happening again.

Our world is entering a new era of globalization, where decentralized access to revolutionary science and technology, the proliferation of biolaboratories, deepening national rivalries, serious ecological and climate issues, fast-growing populations, and many other factors are increasing risks across the board, including the risk of pandemics with the potential to be far more deadly than COVID-19. Whether we like it or not, our fates are interconnected in our interdependent world.<sup>53</sup>

If we do not get to the bottom of what went wrong with the COVID-19 pandemic, if we fail in our efforts to fearlessly understand all shortcomings and shore up the vulnerabilities this crisis has so clearly exposed, the victims of the next pandemic -- our children and grandchildren -- will ask us why we failed to protect them when we knew what was at stake and had the chance.

Thank you.

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<sup>52</sup> "The Independent Panel for Pandemic Preparedness and Response," The Independent Panel for Pandemic Preparedness and Response, accessed March 2, 2023, <https://theindependentpanel.org/>.

<sup>53</sup> "OneShared.World," accessed March 2, 2023, <https://www.oneshared.world/>.

## **Bibliography**

- Andersen, Kristian G., Andrew Rambaut, W. Ian Lipkin, Edward C. Holmes, and Robert F. Garry. "The Proximal Origin of SARS-CoV-2 | Nature Medicine." *Nature Medicine*, March 17, 2020. <https://www.nature.com/articles/s41591-020-0820-9>.
- Barnes, Julian E. "Lab Leak Most Likely Caused Pandemic, Energy Dept. Says." *The New York Times*, February 26, 2023, sec. U.S. <https://www.nytimes.com/2023/02/26/us/politics/china-lab-leak-coronavirus-pandemic.html>.
- Board, Editorial. "Opinion | She Told the Truth about Wuhan. Now She Is near Death in a Chinese Prison." *Washington Post*, November 7, 2021. <https://www.washingtonpost.com/opinions/2021/11/07/zhang-zhan-prisoner-wuhan-china-covid-origin/>.
- Butler, Colin, Alina Chan, Virginie Courtier-Orgogozo, Gilles Demaneuf, Elisa Harris, Jonathan Latham, Milton Leitenberg, et al. *Proposed Changes to the Composition of the SAGO Committee*, 2021. <https://doi.org/10.13140/RG.2.2.18805.50405/1>.
- Calisher, Charles, Dennis Carroll, Rita Colwell, Ronald B. Corley, Peter Daszak, Christian Drosten, Luis Enjuanes, et al. "Statement in Support of the Scientists, Public Health Professionals, and Medical Professionals of China Combatting COVID-19." *The Lancet* 395, no. 10226 (February 19, 2020): e42–43. [https://doi.org/10.1016/S0140-6736\(20\)30418-9](https://doi.org/10.1016/S0140-6736(20)30418-9).
- "Call for a Comprehensive Investigation of the Origin of SARS-CoV-2, If Possible with Chinese Government Participation," June 28, 2021. <https://jamiemetzl.com/wp-content/uploads/2021/06/Letter-4-Draft-1.pdf>.
- The New York Times. "Calls for Further Inquiries Into Coronavirus Origins," April 7, 2021, sec. Science. <https://www.nytimes.com/interactive/2021/04/07/science/virus-inquiries-pandemic-origins.html>.
- Chan, Alina, and Matt Ridley. *Viral*, 2021. <https://www.harperacademic.com/book/9780063139121/viral>.

- Cohen, Jon. "With Call for 'raw Data' and Lab Audits, WHO Chief Pressures China on Pandemic Origin Probe," July 17, 2021. <https://www.science.org/content/article/who-chief-sharpens-call-china-further-help-probe-origin-pandemic>.
- Cohen, Zachary, Alex Marquardt, and Jim Acosta. "Trump's Claim He's Seen Evidence Coronavirus Originated in China Lab Contradicts US Intel Community | CNN Politics." CNN Politics, January 5, 2020. <https://edition.cnn.com/2020/04/30/politics/trump-intelligence-community-china-coronavirus-origins/index.html>.
- BBC News. "Covid: China Rejects WHO Plan for Second Phase of Virus Origin Probe," July 22, 2021, sec. China. <https://www.bbc.com/news/world-asia-china-57926368>.
- "COVID-19 Misinformation by China." In *Wikipedia*, February 21, 2023. [https://en.wikipedia.org/w/index.php?title=COVID-19\\_misinformation\\_by\\_China&oldid=1140626264](https://en.wikipedia.org/w/index.php?title=COVID-19_misinformation_by_China&oldid=1140626264).
- "COVID-19 Response." SEVENTY-THIRD WORLD HEALTH ASSEMBLY, n.d.
- Daszak, Peter. "Understanding the Risk of Bat Coronavirus Emergence." Accessed March 2, 2023. <https://reporter.nih.gov/project-details/9819304>.
- Deigin, Yuri. "Thunder Out of China." *Inference* 6, no. 4 (February 7, 2022). <https://inference-review.com/article/thunder-out-of-china>.
- Fidler, David P. *SARS, Governance and the Globalization of Disease*, Palgrave Macmillan, 2004. <https://link.springer.com/book/10.1057/9780230006263>.
- Gao, George, William Liu, Peipei Liu, Wenwen Lei, Zhiyuan Jia, Xiaozhou He, Lin-Lin Liu, et al. "Surveillance of SARS-CoV-2 in the Environment and Animal Samples of the Huanan Seafood Market." Preprint. In Review, February 25, 2022. <https://doi.org/10.21203/rs.3.rs-1370392/v1>.
- Gilsinan, Kathy. "How China Deceived the WHO." *The Atlantic*, April 12, 2020. <https://www.theatlantic.com/politics/archive/2020/04/world-health-organization-blame-pandemic-coronavirus/609820/>.
- Gronvall, Gigi Kwik. "The Contested Origin of SARS-CoV-2," *Survival*, 63:6, 7-36, 2021, DOI: [10.1080/00396338.2021.2006442](https://doi.org/10.1080/00396338.2021.2006442).



Kerr, Andrew. “China Attacks WHO Advisory Member For Highlighting Alleged Errors In COVID Origins Report | The Daily Caller,” August 4, 2021.

<https://dailycaller.com/2021/04/08/china-attacks-jamie-metzl-open-letter/>.

The New York Times. “Letter Seeking International Inquiry Into Origins of the Coronavirus,” March 4, 2021, sec. U.S. <https://www.nytimes.com/interactive/2021/03/04/us/covid-origins-letter.html>.

Lock, Samantha. “Wuhan Lab Video Appearing to Show Bats in Cages Fuels Speculation About Pandemic Origins,” June 15, 2021. <https://www.newsweek.com/wuhan-lab-video-shows-bats-cages-speculation-covid19-pandemic-origins-1600748>.

Massey, Jacques, and Karl Laske. “The Strange Saga of How France Helped Build Wuhan’s Top-Security Virus Lab.” Mediapart, May 31, 2020. <https://www.mediapart.fr/en/journal/france/310520/strange-saga-how-france-helped-build-wuhans-top-security-virus-lab>.

Metzl, Jamie. “Covid-19 Offers a Chance to Build a Better World. We Must Seize It. (Opinion) | CNN.” CNN Business, May 17, 2020. <https://edition.cnn.com/2020/05/17/opinions/covid-19-worldwide-response-metzl/index.html>.

———. “Defunding the WHO Mid-Pandemic Is Lunacy | Opinion.” Newsweek, April 16, 2020. <https://www.newsweek.com/defunding-who-mid-pandemic-lunacy-opinion-1498369>.

———. “Opinion | How to Hold Beijing Accountable for the Coronavirus.” *Wall Street Journal*, July 28, 2020, sec. Opinion. <https://www.wsj.com/articles/how-to-hold-beijing-accountable-for-the-coronavirus-11595976973>.

———. “Origins of SARS-CoV-2 | Jamie Metzl,” February 7, 2023. <https://jamiemetzl.com/origins-of-sars-cov-2/>.

———. “The COVID-19 Catastrophe Demands a National Commission Review.” Text. *The Hill* (blog), August 17, 2020. <https://thehill.com/opinion/white-house/512298-the-covid-19-catastrophe-demands-a-national-commission-review/>.

- Metzl, Jamie, and Matt Pottinger. "Opinion | We Still Don't Know the Truth About Covid." *Wall Street Journal*, February 8, 2023, sec. Opinion. <https://www.wsj.com/articles/we-still-dont-know-the-truth-about-covid-wuhan-lab-virology-pandemic-source-gain-of-function-who-research-accountability-china-congress-11675893326>.
- Myers, Steven Lee, and Chris Buckley. "China Created a Fail-Safe System to Track Contagions. It Failed." *The New York Times*, March 29, 2020, sec. World. <https://www.nytimes.com/2020/03/29/world/asia/coronavirus-china.html>.
- "OneShared.World | Sign the Pledge of Interdependence." Accessed March 2, 2023. <https://www.oneshared.world/>.
- "Open Letter to the World Health Organization and the Members of Its Executive Board," April 30, 2021. <https://jamiemetzl.com/wp-content/uploads/2021/04/Open-Letter-to-the-World-Health-Organization-and-the-Members-of-its-Executive-Board-1.pdf>.
- Rogin, Josh. "Opinion | State Department Cables Warned of Safety Issues at Wuhan Lab Studying Bat Coronaviruses." *Washington Post*, April 14, 2020. <https://www.washingtonpost.com/opinions/2020/04/14/state-department-cables-warned-safety-issues-wuhan-lab-studying-bat-coronaviruses/>.
- UN Stats. "SDG Indicators." Accessed March 2, 2023. <https://unstats.un.org/sdgs/report/2021/goal-01/>.
- Shih, Gerry. "As WHO Coronavirus Mission Leaves Empty-Handed, China Claims Propaganda Win." *Washington Post*, February 10, 2021. [https://www.washingtonpost.com/world/asia\\_pacific/coronavirus-china-who-wuhan-pandemic/2021/02/10/f1751148-6b41-11eb-a66e-e27046e9e898\\_story.html](https://www.washingtonpost.com/world/asia_pacific/coronavirus-china-who-wuhan-pandemic/2021/02/10/f1751148-6b41-11eb-a66e-e27046e9e898_story.html).
- Silver, Andrew, and David Cyranoski. "China Is Tightening Its Grip on Coronavirus Research." *Nature* 580, no. 7804 (April 15, 2020): 439–40. <https://doi.org/10.1038/d41586-020-01108-y>.
- Stahl, Lesley. "What Happened in Wuhan? Why Questions Still Linger on the Origin of the Coronavirus." CBS News, March 28, 2021. <https://www.cbsnews.com/news/covid-19-wuhan-origins-60-minutes-2021-03-28/>.

Stull, Josh. “The Benefits of International Collaboration and Global Engagement.” National Institute of Food and Agriculture, September 12, 2022.

<http://www.nifa.usda.gov/about-nifa/blogs/benefits-international-collaboration-global-engagement>.

Taylor, Adam, Emily Rauhala, and Selsoe Martin Sorensen. “In New Documentary, WHO Scientist Says Chinese Officials Pressured Investigation to Drop Lab-Leak Hypothesis.” *Washington Post*, August 12, 2021.

<https://www.washingtonpost.com/world/2021/08/12/who-origins-embarek/>.

The Independent Panel for Pandemic Preparedness and Response. “The Independent Panel for Pandemic Preparedness and Response.” Accessed March 2, 2023.

<https://theindependentpanel.org/>.

U.S Department of Health and Human Services. “The National Institutes of Health and EcoHealth Alliance Did Not Effectively Monitor Awards and Subawards, Resulting in Missed Opportunities to Oversee Research and Other Deficiencies,” January 25, 2023.

<https://oig.hhs.gov/oas/reports/region5/52100025.asp>.

The Economist. “The Pandemic’s True Death Toll,” March 2, 2023.

<https://www.economist.com/graphic-detail/coronavirus-excess-deaths-estimates>.

Wang, Chen, Peter W. Horby, Frederick G. Hayden, and George F. Gao. “A Novel Coronavirus Outbreak of Global Health Concern.” *The Lancet* 395, no. 10223 (January 24, 2020): 470–73. [https://doi.org/10.1016/S0140-6736\(20\)30185-9](https://doi.org/10.1016/S0140-6736(20)30185-9).

WHO. “COVID-19 Virtual Press Conference Transcript - 9 February 2021.” WHO, September 2, 2021. <https://www.who.int/publications/m/item/covid-19-virtual-press-conference-transcript---9-february-2021>.

———. “Human Genome Editing: A Framework for Governance.” WHO, December 7, 2021. <https://www.who.int/publications-detail-redirect/9789240030060>.

———. “Scientific Advisory Group for the Origins of Novel Pathogens (SAGO) - Preliminary Report of the SAGO,” September 6, 2022. [https://cdn.who.int/media/docs/default-source/scientific-advisory-group-on-the-origins-of-novel-pathogens/sago-report-09062022.pdf?sfvrsn=42b55bbc\\_1&download=true](https://cdn.who.int/media/docs/default-source/scientific-advisory-group-on-the-origins-of-novel-pathogens/sago-report-09062022.pdf?sfvrsn=42b55bbc_1&download=true).

- . “Scientific Advisory Group on the Origins of Novel Pathogens (SAGO).” WHO. Accessed March 2, 2023. [https://www.who.int/groups/scientific-advisory-group-on-the-origins-of-novel-pathogens-\(sago\)](https://www.who.int/groups/scientific-advisory-group-on-the-origins-of-novel-pathogens-(sago)).
- . “WHO Director-General Opening Remarks at the Member State Briefing on the COVID-19 Pandemic Evaluation.” WHO, September 7, 2020. <https://www.who.int/director-general/speeches/detail/who-director-general-opening-remarks-at-the-member-state-briefing-on-the-covid-19-pandemic-evaluation--9-july-2020>.
- . “WHO Director-General’s Remarks at the Member State Briefing on the Report of the International Team Studying the Origins of SARS-CoV-2.” WHO, March 30, 2021. <https://www.who.int/director-general/speeches/detail/who-director-general-s-remarks-at-the-member-state-briefing-on-the-report-of-the-international-team-studying-the-origins-of-sars-cov-2>.
- “WHO-Convened Global Study of the Origins of SARS-CoV-2: Terms of References for the China Part,” July 31, 2020. [https://drive.google.com/file/d/1rx0W2efbE0R1Aq-IALWTqD22VsWbTIO-/view?usp=embed\\_facebook](https://drive.google.com/file/d/1rx0W2efbE0R1Aq-IALWTqD22VsWbTIO-/view?usp=embed_facebook).
- Worobey, Michael, Joshua I. Levy, Lorena Malpica Serrano, Alexander Crits-Christoph, Jonathan E. Pekar, Stephen A. Goldstein, Angela L. Rasmussen, et al. “The Huanan Seafood Wholesale Market in Wuhan Was the Early Epicenter of the COVID-19 Pandemic.” *Science* 377, no. 6609 (August 26, 2022): 951–59. <https://doi.org/10.1126/science.abp8715>.
- Xue, Ye. “China’s Economic Sanctions Made Australia More Confident | Lowy Institute,” October 22, 2021. <https://www.lowyinstitute.org/the-interpreter/china-s-economic-sanctions-made-australia-more-confident>.
- “两株新型蝙蝠SARS相关冠状病毒对表达人ACE2的转基因小鼠的致病性研究-国家自然科学基金摘要查询-MedSci.Cn.” Accessed March 3, 2023. [https://www.medsci.cn/sci/nsfc\\_show.do?id=d976823520ca](https://www.medsci.cn/sci/nsfc_show.do?id=d976823520ca).
- “中华人民共和国外交部.” Accessed March 2, 2023. <https://www.mfa.gov.cn/>.